

INORGANIC HYDROGEN AND HYDROGEN POLYMER COMPOUNDS AND
APPLICATIONS THEREOF

ABSTRACT

5 Compounds are provided comprising at least one neutral, positive,
or negative hydrogen species having a binding energy greater than its
corresponding ordinary hydrogen species, or greater than any hydrogen
species for which the corresponding ordinary hydrogen species is
unstable or is not observed. Compounds comprise at least one increased
10 binding energy hydrogen species and at least one other atom, molecule,
or ion other than an increased binding energy hydrogen species. One
group of such compounds contains one or more increased binding energy
hydrogen species selected from the group consisting of H_n , H_n^- , and H_n^+
where n is a positive integer, with the proviso that n is greater than 1
15 when H has a positive charge. Another group of such compounds may
have the formula $[MH_mM'X]_n$ wherein m and n are each an integer, M and
M' are each an alkali or alkaline earth cation, X is a singly or doubly
negative charged anion, and the hydrogen content H_m of the compound
comprises at least one increased binding energy hydrogen species.
20 Applications of the compounds include use in batteries, fuel cells, cutting
materials, light weight high strength structural materials and synthetic
fibers, corrosion resistant coatings, heat resistant coatings, xerographic
compounds, proton source, photoluminescent compounds, phosphors for
lighting, ultraviolet and visible light source, photoconductors,
25 photovoltaics, chemiluminescent compounds, fluorescent compounds,
optical coatings, optical filters, extreme ultraviolet laser media, fiber optic
cables, magnets and magnetic computer storage media, superconductors,
and etching agents, masking agents, agents to purify silicon, dopants in
semiconductor fabrication, cathodes for thermionic generators, fuels,
30 explosives, and propellants. Increased binding energy hydrogen
compounds are useful in chemical synthetic processing methods and
refining methods. The increased binding energy hydrogen ion has
application as the negative ion of the electrolyte of a high voltage
electrolytic cell. The selectivity of increased binding energy hydrogen
35 species in forming bonds with specific isotopes provides a means to
purify desired isotopes of elements.

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